**Montana Board of Oil and Gas Conservation**
**Environmental Assessment**

**Operator:** Continental Resources, Inc.
**Well Name/Number:** Twyla 3-30 H
**Location:** NW NE Section 30 T24N R54
**County:** Richland **, MT; Field (or Wildcat)** W/C (Bakken Horizontal)

## Air Quality

(possible concerns)
Long drilling time: No, 30 to 40 days drilling time.
Unusually deep drilling (high horsepower rig): No, triple derrick rig to drill a single lateral horizontal Bakken Formation test, 19,598'MD/9,616'TVD.
Possible H2S gas production: Slight chance H2S gas from Mississippian Formations.
In/near Class I air quality area: No Class I air quality area nearby.
Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:
X Air quality permit (AQB review)
__ Gas plants/pipelines available for sour gas
__ Special equipment/procedures requirements
__ Other:

Comments: No special concerns – using triple rig to drill a single lateral horizontal Bakken Formation test, 19,598'MD/9,616'TVD. If there is an existing pipeline for gas in the area and associated gas can be gathered or if no gathering system nearby associated gas can be flared under Board Rule 36.22.1220.

## Water Quality

(possible concerns)
Salt/oil based mud: Yes to intermediate casing string hole to be drilled with oil based invert drilling fluids. Horizontal lateral will be drilled with brine water. Surface casing hole will use freshwater and freshwater mud system.
High water table: None anticipated.
Surface drainage leads to live water: No, nearest drainage is an unnamed ephemeral tributary to North Fork East Redwater Creek, about 3/16 of a mile north from this location.
Water well contamination: None anticipated, closest water wells are about ½ of a mile to the northwest, about ½ of a mile to the south, about 5/8 of a mile to the southwest, about 5/8 of a mile to the southeast, about ¾ of a mile to the northeast, about ¾ of a mile to the southwest, about ¾ of a mile to the south, about ¾ of a mile to the northwest, about 7/8 of a mile to the northwest, about 1 mile to the northeast and about 1 mile to the southeast from this location. Depth of these water wells range from 40' to 1,170'. Surface hole will be drilled with freshwater and freshwater mud system (rule 36.22.1001). Surface casing will be set at 1440' and steel casing set and cemented to surface from 1440'.
Porous/permeable soils: No, silty-sandy clay soils.
Class I stream drainage: No Class I stream drainages in the area of review.

Mitigation:
__ Lined reserve pit

X Adequate surface casing
__ Berms/dykes, re-routed drainage
X Closed mud system
X Off-site disposal of solids/**liquids** (in approved facility)
X Other: Lined cuttings pit will be used since this is a closed loop mud system to be employed.

Comments: Require 1440' of surface casing be set to cover the base of the Fox Hills and cemented to surface adequate to protect freshwater zones.

**Soils/Vegetation/Land Use**

(possible concerns)
Steam crossings: No stream crossings required.
High erosion potential: Yes possible high erosion potential on cut slope, moderate cut, up to 22.1' and moderate fill, up to 14.8', required.
Loss of soil productivity: No, location will be restored after drilling if unproductive. If productive, unused portion of this drilling location will be restored.
Unusually large wellsite: Very large wellsite, 500'X300' required.
Damage to improvements: Slight
Conflict with existing land use/values: Slight, surface use appears to be cultivated land.

Mitigation
__ Avoid improvements (topographic tolerance)
__ Exception location requested
X Stockpile topsoil
__ Stream Crossing Permit (other agency review)
X Reclaim unused part of wellsite if productive
__ Special construction methods to enhance reclamation
__ Other _____

Comments: Access will be over existing county road, #133. About 293' of new access road will be built into this location off the existing county road. Cuttings will be buried in the lined cuttings pit. Oil based drilling fluids will be recycled. Completion fluids will be hauled to a commercial SWD disposal. The lined cuttings pit will be allowed to dry and then closed by filling and mixing with clay subsoils. Minimum of 4' of cover over the top of the cuttings. No special concerns.

**Health Hazards/Noise**

(possible concerns)
Proximity to public facilities/residences: Closest residences are about ¾ of a mile to west, about ¾ of a mile to the southwest, about ¾ of a mile to the northeast and 1 mile to the northeast from this location.
Possibility of H2S: Slight chance from Mississippian Formations.
Size of rig/length of drilling time: Triple drilling rig/short 30 to 40 days drilling time

Mitigation:
X Proper BOP equipment
__ Topographic sound barriers
__ H2S contingency and/or evacuation plan
__ Special equipment/procedures requirements
__ Other:_____

Comments: Adequate surface casing cemented to surface with an operational BOP stack (annular and double ram rated for 5,000 psig) should mitigate any problems.

**Wildlife/recreation**

(possible concerns)
Proximity to sensitive wildlife areas (DFWP identified): Fox Lake State Game Management Area, about 11.5 miles to the southeast from this location.
Proximity to recreation sites: Fox Lake State Game Management Area, about 11.5 miles to the southeast from this location.
Creation of new access to wildlife habitat: No new access to wildlife habitat.
Conflict with game range/refuge management: No conflict.
Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Least Tern, Whooping Crane and Piping Plover. Candidate species are the Sprague's Pipit and the Greater Sage Grouse. NH tracker website indicates zero(0) species of concern in this area.

Mitigation:
__ Avoidance (topographic tolerance/exception)
__ Other agency review (DFWP, federal agencies, DSL)
__ Screening/fencing of pits, drillsite
__ Other: _____
Comments: Private cultivated surface lands. There maybe species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern are discovered at this location.

**Historical/Cultural/Paleontological**

(possible concerns)
Proximity to known sites None identified.
Mitigation
__ avoidance (topographic tolerance, location exception)
__ other agency review (SHPO, DSL, federal agencies)
__ Other: _____
Comments: Private cultivated surface lands. There maybe possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite.

**Social/Economic**

(possible concerns)
__ Substantial effect on tax base
__ Create demand for new governmental services
__ Population increase or relocation
Comments: No concerns

**Remarks or Special Concerns for this site**

No, special concerns for drilling this single lateral horizontal Bakken Formation test, 19,598'MD/9,616'TVD.

**Summary: Evaluation of Impacts and Cumulative effects**

No significant long term impacts expected, some short term impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki
(title:) Chief Field Inspector
Date: August 29, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website
(Name and Agency)

Water wells in Richland County
(subject discussed)
August 28, 2012
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES
MONTANA COUNTIES, Richland County
(subject discussed)
August 29, 2012
(date)

Montana Natural Heritage Program Website
(Name and Agency)
Heritage State Rank= S1, S2, S3 T24N R54E
(subject discussed)

August 29, 2012
(date)

If location was inspected before permit approval:
Inspection date: _____
Inspector: _____
Others present during inspection: _____